

An Introduction to the Indiana Invasive Species Council



Dr. Steve Yaninek

Department of Entomology,
Purdue University

Feral hogs



Asian carp



Emerald ash borer



Giant Hogweed



Yellow Floating
Heart



Why We Should Care: Economic and Environmental Costs of Invasive Species (IS)



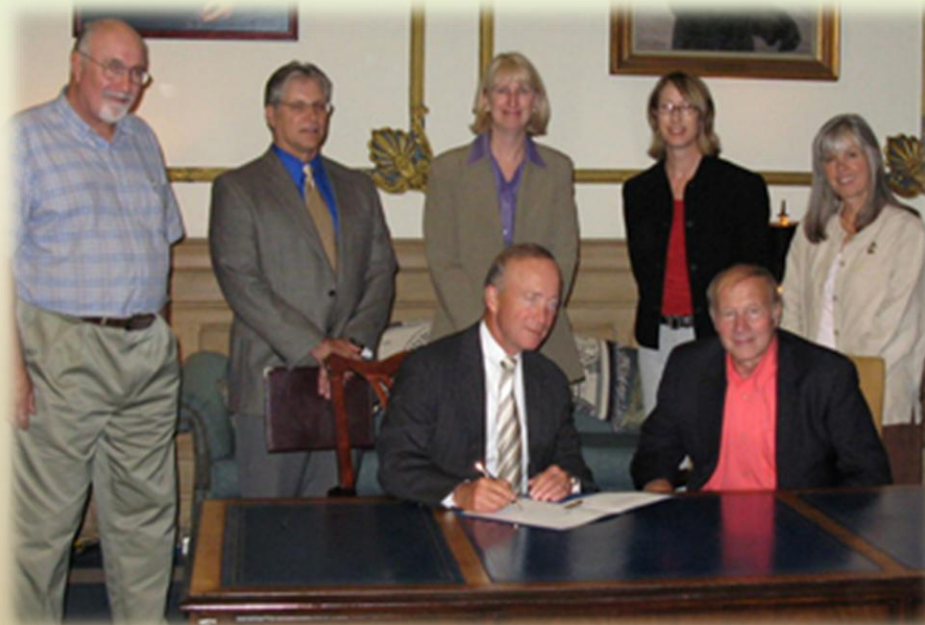
Worldwide, costs attributed to damage from IS are \$1.4 trillion per year - **nearly 5% of the world's GNP.**

- To date, about **5,000 types of alien plants** are found in US ecosystems.
- Alien weeds invade **1,730,000 acres** of wildlife habitat per year in the US.
- There are 180 non-indigenous aquatic species in the Great Lakes ecosystem - **15% cause serious harm.**
- Invasive species cost the US **\$138 billion** per year.
- In the US, approximately **9%** of forest products – worth a total of **\$7 billion** per year - are lost as a result of non-native plant pathogens.
 - **\$13.5 billion** per year for production pests
 - **\$1.5 billion** per year for lawns, gardens, golf courses
 - *No good estimates for costs in natural systems*

Formation of the Council

On April 20, 2009, **Governor Mitch Daniels** signed into law legislation creating the state **Invasive Species Council**.

This action was based on the recommendation of a task force established by a joint House and Senate committee.



Indiana Invasive
Species Council

Council Members

6 designated by legislation

- **Sara Christensen**, representing the Indiana Agriculture Director, Indiana State Department of Agriculture
- **Bill Fielding**, representing the Commissioner, Indiana Department of Transportation
- **Dr. Sandi Norman**, representing the Indiana State Veterinarian, Indiana State Board of Animal Health
- **Doug Keller**, Aquatic Invasive Species Coordinator, Indiana Department of Natural Resources' Division of Fish and Wildlife
- **Phil Marshall**, Terrestrial Invasive Species Coordinator, Department of Natural Resources' Division of Entomology and Plant Pathology
- **Steve Yaninek**, representing the Dean of Agriculture, Purdue University, Council Secretariat, (Council Chairman)

Council Members

5 appointed by the Governor

- **Philip Gramelspacher**, Past President, Indiana Forestry and Woodland Owners Association, representing industry
- **Kristopher Krouse**, Executive Secretary, Shirley Heinze Land Trust, representing land trusts, conservation and/or parks and recreation organizations
- **Stuart Lowry**, Director, Indianapolis Parks and Recreation, representing land trusts, conservation and/or parks and recreation organizations
- **John Jachetta**, Scientist, Dow AgroSciences, representing research
- **Open position**, representing industry

Duties of the Council

- Recommend project priorities, funding, and rules and laws
- Identify lead agencies to develop useful inventories and databases.
- Communicate with agencies and organizations outside of Indiana to enhance consistency and effectiveness.
- Coordinate education and outreach activities.
- Plan and conduct a public informational meeting every 2 years

Duties of the Council

- Help government agencies review and correct policies and procedures.
- Help state agencies be accountable for their actions.
- Receive and manage reports from all governmental agencies that act on the council's recommendations.
- Apply for and provide grants for education and management of invasive species.

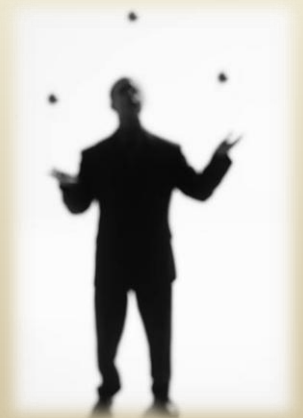
How the IISC Operates

- Conduct annual public meetings - quarterly the first year.
- Form working groups to address specific issues.
- Develop education and outreach initiatives.
- Host a statewide conference every two years.
- Present issues and receive input from public.



Current Priorities of the IISC

- Fill the open industry position on the Council.
- Explore funding opportunities.
- Communicate the roles and responsibilities of the Council to stakeholders and the public.
- Report on Council activities to the Natural Resource Study Committee by June, 2011.
- Develop a long-term strategic plan.
- Review existing weed laws in Indiana.
- Develop an education and outreach advisory committee.



Current IISC Working Groups and Advisory Committees

- IISC Conference Working Group
 - Communications and Website Working Group
 - Data Collection and Management Working Group
-

- Invasive Plant Advisory Committee
- Aquatic Invasive Species Advisory Committee
- Education and Outreach Advisory Committee

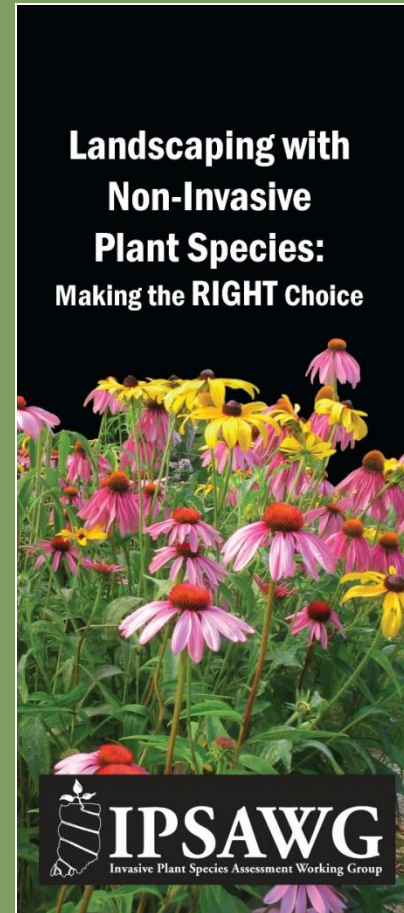


Invasive Plant Advisory Committee

- Chaired by Ellen Jacquart, Director of Stewardship for The Nature Conservancy in Indiana
- IISC member Kris Krouse, Executive Director of Shirley Heinze Land Trust, is the IISC liaison for this committee
- Working on two main projects – creating an invasive plant list for Indiana and developing Best Management Practices for government agencies to implement to reduce introduction and movement of invasive species.

Creating an Invasive Plant List for Indiana

- Don't we already have one?
- Why do we need one?
 - Education
 - Regulation

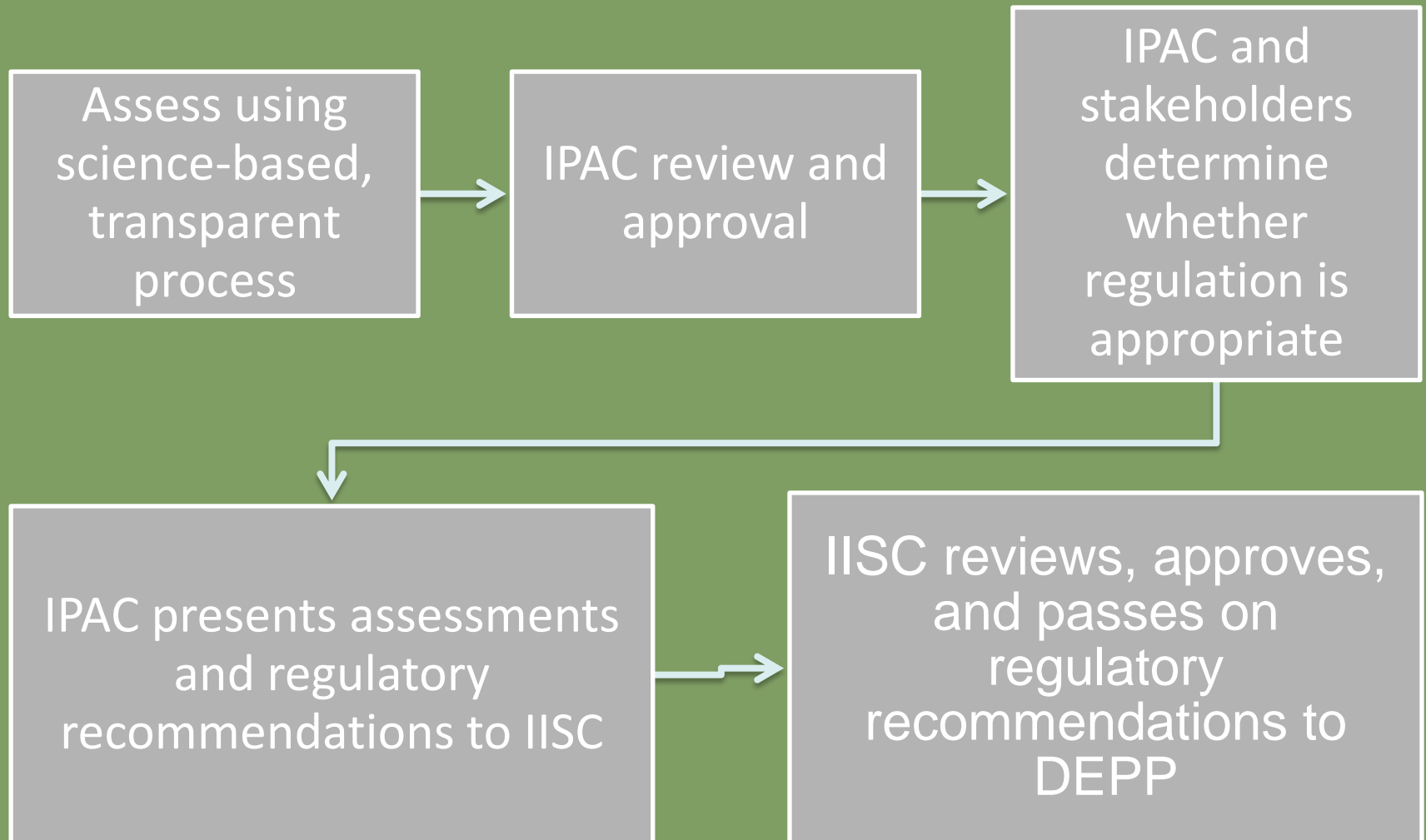


2006

Regulating Invasive Plants in Indiana – Jurisdiction Over Invasive Species

Agency	Code	Authority over:	Defined as:
DNR - Division of Entomology and Plant Pathology	14-24-2-1	Pests and pathogens	An arthropod, nematode, microorganism, fungus, parasitic plant, mollusk, plant disease, or exotic weed that may be injurious to nursery stock, agricultural crops, other vegetation, or bees (per IC 14-8-2-203). Purple loosestrife, multiflora rose, kudzu, Brazilian elodea, hydrilla
Office of Indiana State Chemist and Seed Commissioner	15-15-1-14, 18, 20, 25	Noxious weed seeds	Prohibited and restricted noxious weed seeds are listed at IC 15-16-7-2
County Weed Boards	15-16-7-2	Noxious weeds	Canada thistle, Johnson grass, bur cucumber and shattercane
Township Trustees	15-3-4-2 ,6	Detrimental plants	Canada thistle, Johnson grass, <i>Sorghum alimum</i> , bur cucumber and shattercane

Creating an Invasive Plant List for Indiana



May 4, 2003 template version

**OFFICIAL Assessment of *Lonicera maackii*, *morrowii*, *tatarica*, and *x bella* in
Indiana's Natural Areas**
Answers are underlined

Contents of the Assessment:

- Section I – Invasion Status. Pages 1 - 2. Determines whether the species being evaluated is invasive in Indiana.
Section II – Ecological Impacts of Invasion. Pages 2 - 3. Evaluates the significance of impacts of the species.
Section III – Potential for Expansion. Pages 3 - 4. Evaluates the actual and/or potential expansion of the species.
Section IV – Difficulty of Management. Pages 4 - 5. Evaluates how hard it is to control the invasive species.
Section V – Commercial Value. Page 5. Evaluates how valuable the species is economically in Indiana.

Questions in Sections I – V may direct you to one or more of the following sections for particular invasive species:
Section A. Page 6. For species not currently invasive, assesses threat of genetic invasion and identifies species that have potential to cause future problems
Section B. Page 7. For species which have impacts limited to a few sites, assesses the potential for further spread.
Section C. Page 7. For species which have medium impacts but high value, assesses whether species could be used in specific circumstances that would prevent escape and invasion.

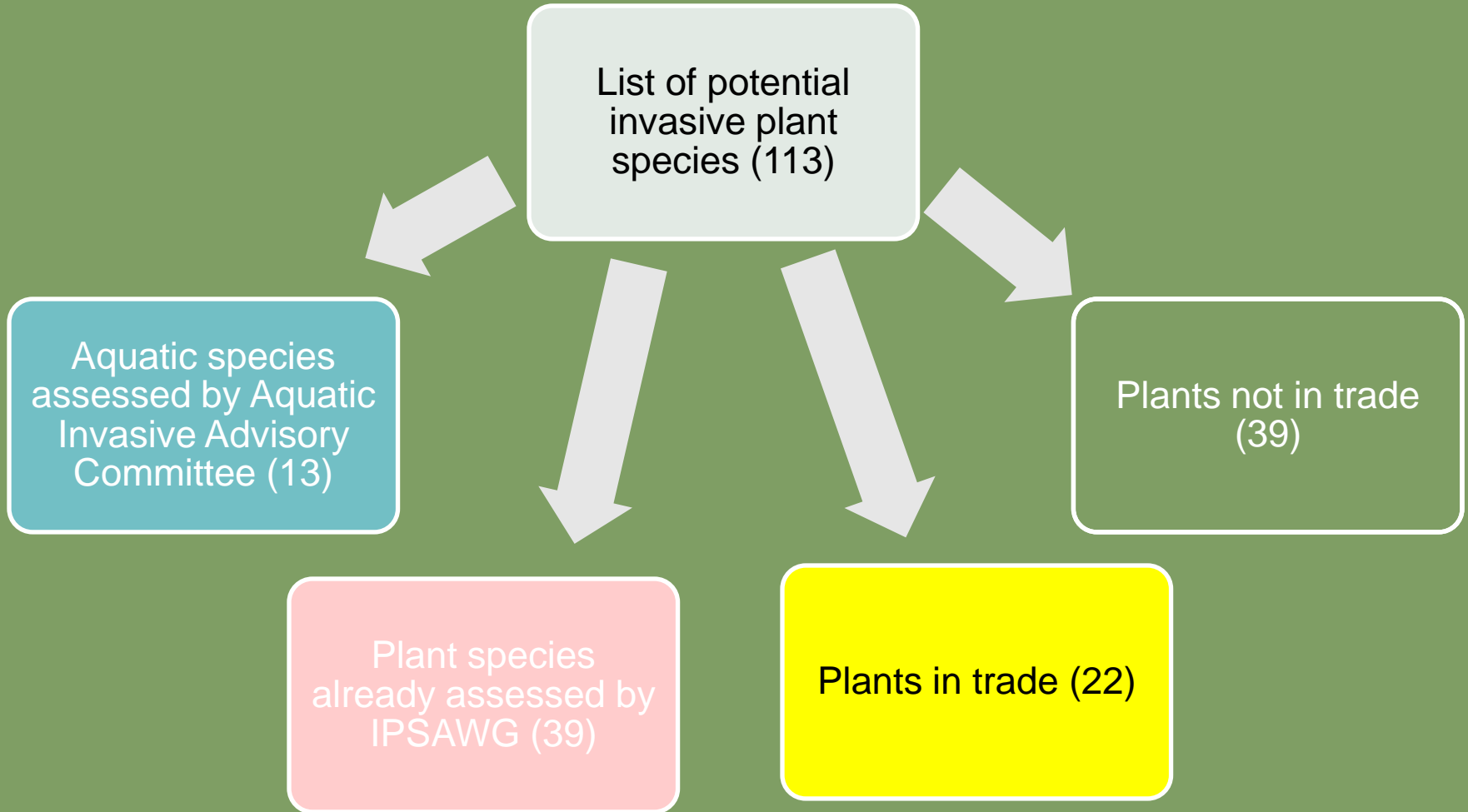
A worksheet for use with the assessment is found on page 8.

Automatic Exemption From the Assessment

Is this species listed on any federal or state noxious, or prohibited plant lists?

If YES then do not proceed with assessment but indicate a conclusion of

Four Assessment Pathways to Create Indiana Invasive Plant List



Draft Invasive Plant List

Plant species in trade already assessed through IPSAWG - to be reviewed

Plant species in trade already assessed through Aquatic Invasive Plants Working Groups

Plant species in trade to be assessed using IPSAWG process

Not highlighted are plant species that are not in trade, to be assessed using NY assessment tool

Common Name	Latin Name	Growth Form	Level of invasion in IN (0=none, 3=high)*	In trade? (bold = very popular)
Norway maple	<i>Acer platanoides</i>	tree	1	yes
Japanese chaff flower	<i>Achyranthes japonica</i>	forb	1	no
snow on the mountain	<i>Aegopodium podagraria</i>	forb	1	yes
tree of heaven	<i>Ailanthus altissima</i>	tree	2	no
garlic mustard	<i>Alliaria petiolata</i>	forb	3	no
black alder	<i>Alnus glutinosa</i>	tree	1	yes
porcelain berry	<i>Ampelopsis brevipedunculata</i>	vine	1	yes
small carpgrass	<i>Anthraxon hispidus</i>	grass	1	no
Japanese barberry	<i>Berberis thunbergii</i>	shrub	2	yes
common barberry	<i>Berberis vulgaris</i>	shrub	1	yes
smooth brome	<i>Bromus inermis</i>	grass	1	yes
butterfly bush	<i>Buddleja davidii</i>	shrub	0	yes
flowering rush	<i>Butomus umbellatus</i>	forb	1	yes
narrowleaf bittercress	<i>Cardamine impatiens</i>	forb	1	no
musk thistle	<i>Carduus nutans</i>	forb	2	no
Asian bittersweet	<i>Celastrus orbiculatus</i>	vine	2	yes
spotted knapweed	<i>Centaurea biebersteinii</i>	forb	2	no
yellow star thistle	<i>Centaurea solstitialis</i>	forb	1	no

INDIANA INVASIVE AQUATIC PLANT WORKING GROUP

DOUG KELLER
AQUATIC INVASIVE SPECIES
COORD.
DIVISION OF FISH AND WILDLIFE

GRIFFY LAKE INVADED BY BRAZILIAN ELODEA

- LIKELY AN AQUARIUM DUMP
- FIRST OBSERVED IN 2002 BUT NOT REPORTED
- DNR DISCOVERED IN 2004
- FIRST PUBLIC WATER POPULATION REPORTED IN MIDWEST

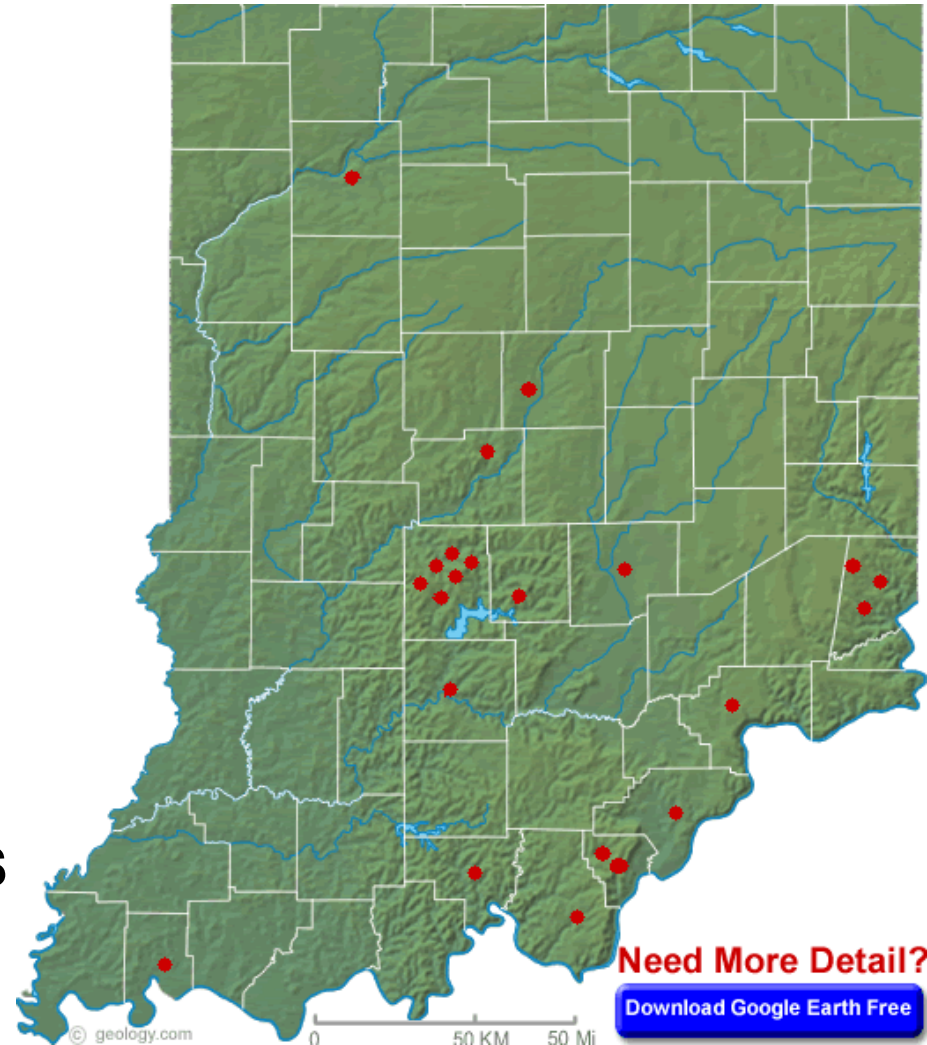


GRIFFY LAKE - COSTS

- '06 and '07 WHOLE-LAKE CHEMICAL TREATMENT
- NON-DETECTABLE SINCE SPRING '07
- DECLARED ERADICATED FALL '09
- \$150,000 FOR 109 ACRE LAKE (\$1380/AC) IN TREATMENT AND SURVEYS

BRAZILIAN ELODEA IN INDIANA

- **22 POPULATIONS**
 - 10 ERADICATED
 - 8 UNDER MANAGEMENT
 - 4 NO ACTION
- 2 STATE MANAGED WATER
- 1 STATE WATER GARDEN
- 17 PRIVATE PONDS <2 acres
- 2 PRIVATE LAKES 12-40 ACRES



Need More Detail?

[Download Google Earth Free](#)

MESERVE LAKE PARROT FEATHER (*Myriophyllum aquaticum*)



MESERVE LAKE PARROT FEATHER ERADICATION PROJECT

- REPORTED TO DNR SUMMER 2008
- BEGIN TREATING FALL 2008
- NUMEROUS TREATMENTS IN 2009
- MONITORING AND HAND REMOVAL
2010 (ONE FRAGMENT FOUND)
- \$42,400 SPENT TO DATE
 - NEARLY \$2,400 PER ACRE!!!

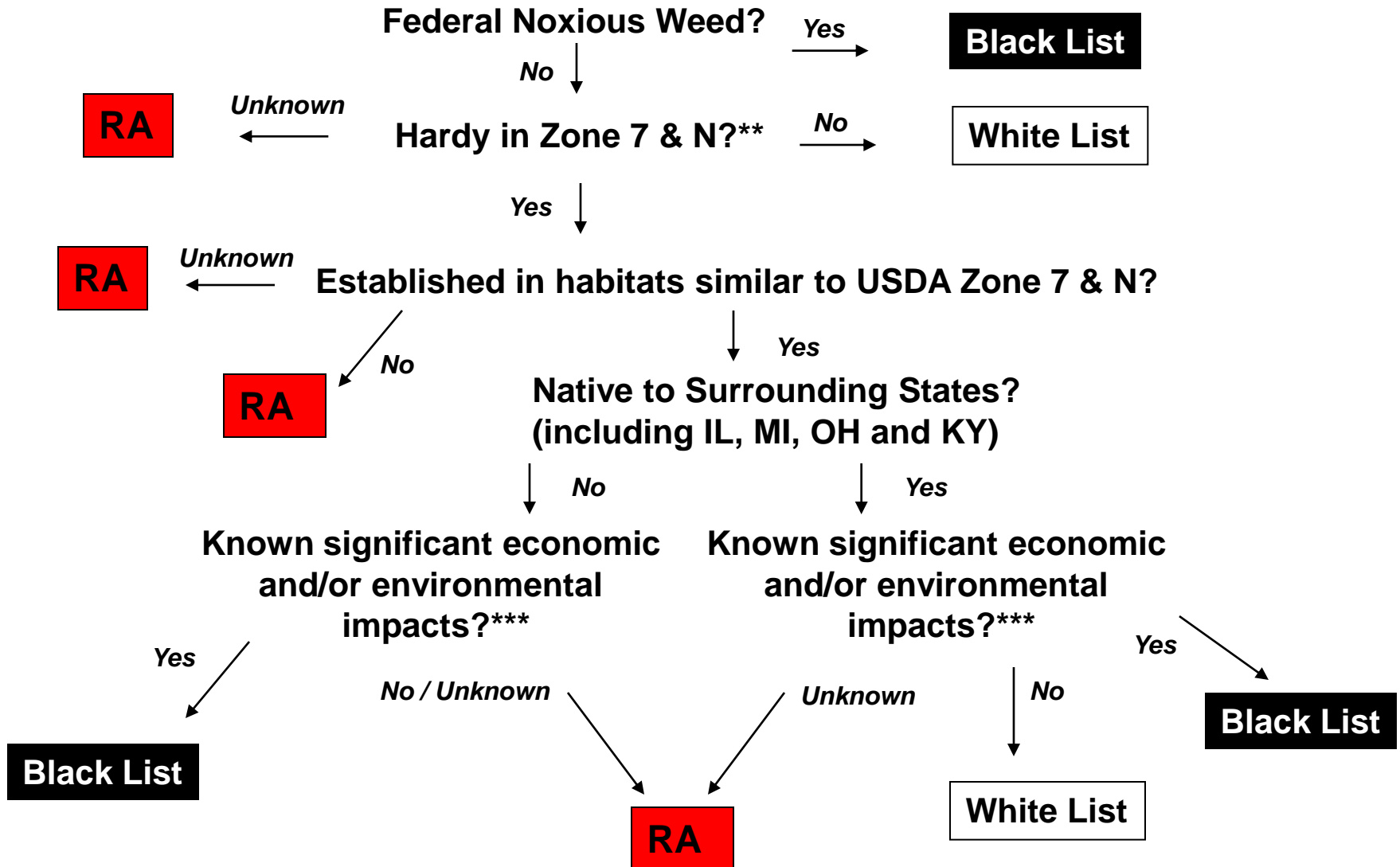


AQUATIC PLANT WORKING GROUP

ACTIVE PARTICIPANT GROUPS

- IL-IN SEA GRANT
- UNIVERSITY OF NOTRE DAME
- THE NATURE CONSERVANCY
- INVASIVE SPECIES CONSULTANT (3)
- **AQUATIC PLANT GROWER (2)**
- **AQUARIUM RETAIL**
- **WATER GARDEN RETAIL OWNER/DESIGNER**
- **INDIANA NURSERY AND LANDSCAPE ASSN**

Process model for non-native herbaceous aquatic plants*:



AQUATIC WEED RISK ASSESSMENT

- MODIFIED NEW ZEALAND AQUATIC WEED RISK ASSESSMENT
 - VERSATILITY – TEMP, HABITAT, SUBSTRATE, CLARITY, pH
 - HABITAT PREFERRED – LAKE, RIVER, WETLAND
 - POTENTIAL FOR SPREAD – METHODS OF SPREAD, INCL HUMANS
 - MATURATION RATE
 - SEEDING ABILITY – QUANTITY AND VIABILITY
 - CLONING ABILITY
 - OBSTRUCTION – PHYSICAL OR AESTHETIC
 - DAMAGE TO NATURAL AREAS
 - OTHER UNDESIRABLE TRAITS – HUMAN HEALTH, AG WEED
 - RESISTANCE TO MANAGEMENT
 - INVASIVENESS BEYOND NATIVE RANGE

NEXT STEPS

- PROPOSE BLACK LIST THAT GROUP AGREED WERE INVASIVE
- FINISH RUNNING SPECIES THROUGH RISK ASSESSMENT
- PROPOSE WHITE/BLACK LISTINGS WHEN ALL SPECIES KNOWN TO OCCUR IN TRADE HAVE BEEN EVALUATED

EXOTIC INVASIVE INSECTS AND DISEASES

IEFPAC

Indiana Exotic Forest Pest Advisory
Committee

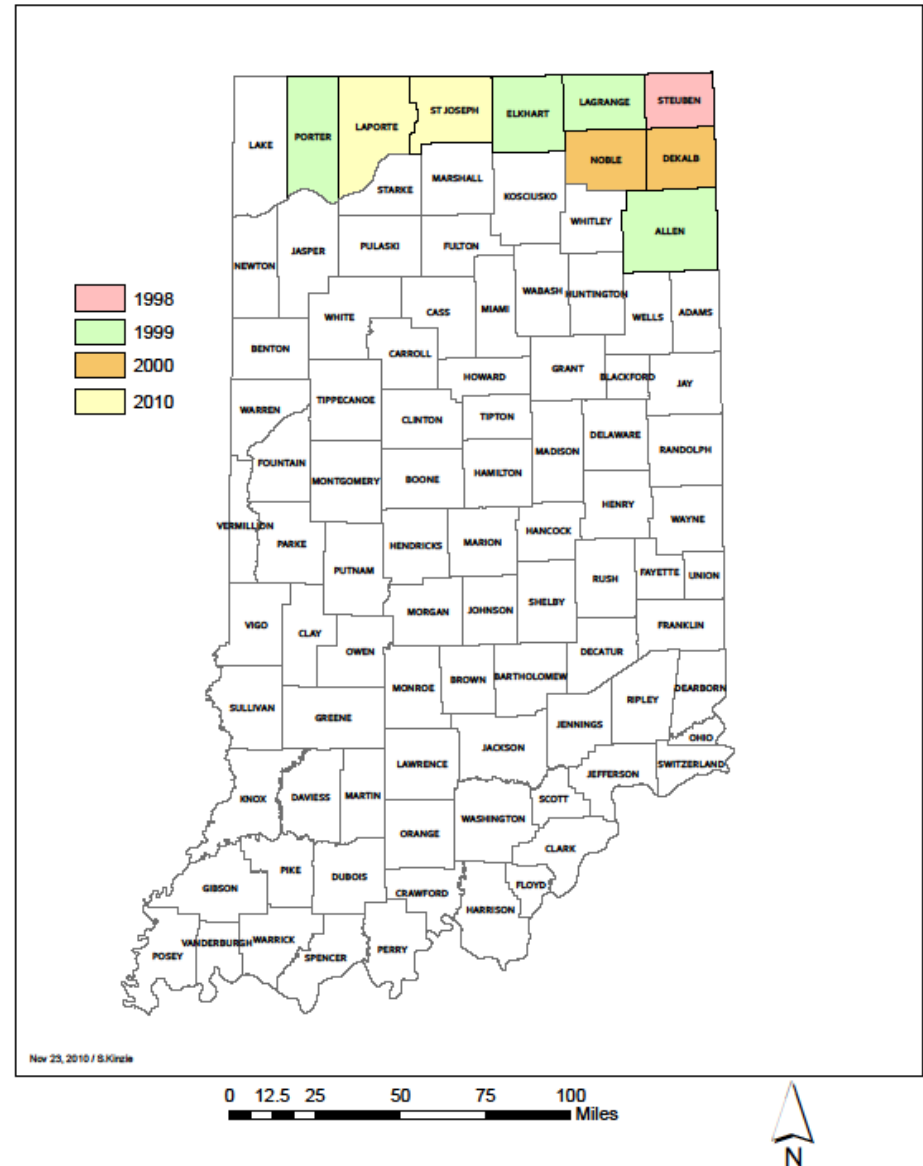
Gypsy Moth

- First Male Moth found in Lake County in 1973
- 9 counties currently quarantined

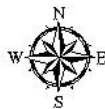


http://en.wikipedia.org/wiki/Gypsy_moth

Indiana Gypsy Moth Quarantine



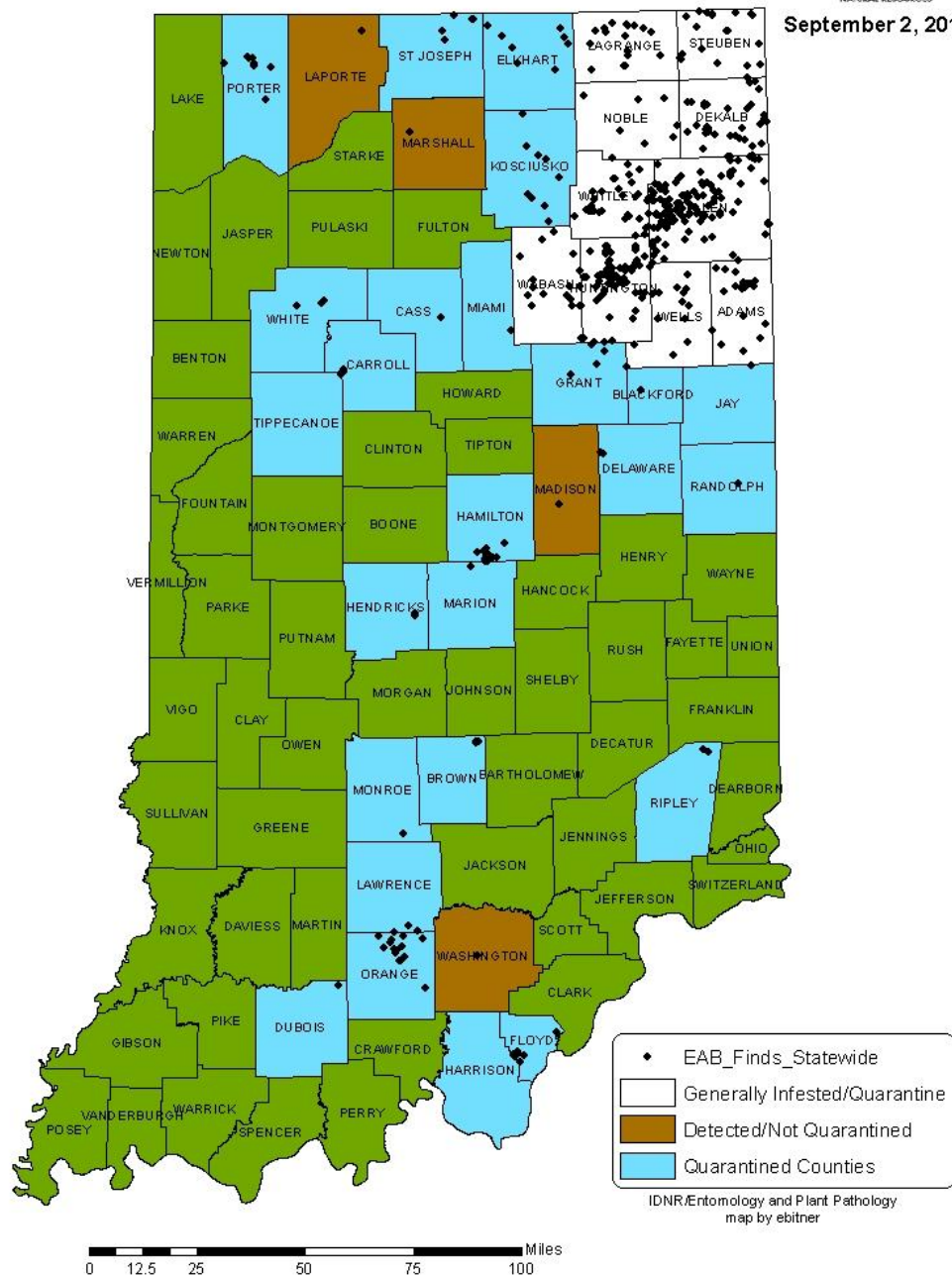




Indiana EAB Quarantine



September 2, 2010



National Pest Alert



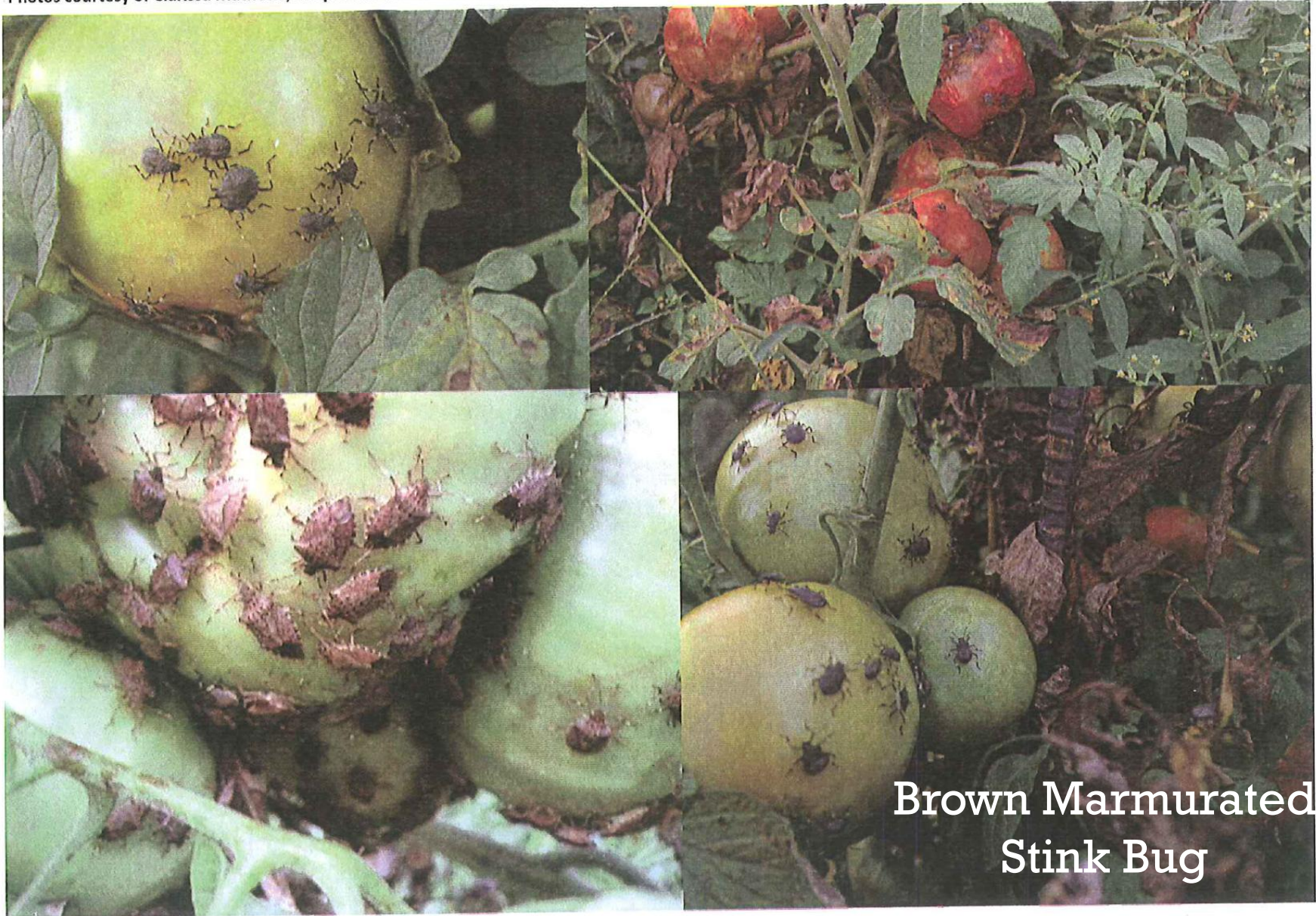
Ralstonia solanacearum
race 3 biovar 2



*Geranium plant infected by *R. solanacearum* R. 3, B. 2, exhibiting southern wilt symptoms.*

Tomato Nymphal and Adult Feeding Early-Mid August 2010

Photos courtesy of Clarissa Mathews, Shepherd Univ. and Ames Herbert, VA Tech.



Brown Marmorated
Stink Bug

Sudden Oak Death

- *Phytophthora ramorum*
- Problem mostly in the western US
 - California, Oregon, Washington
- Many hosts
 - Oak, Maple, Beech, Buckeye, Willow, Rhododendrons, etc..
- Movement in Nursery plants

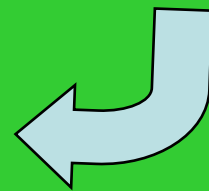
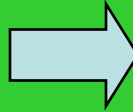


Asian Longhorn Beetle

- Native to Asia
- Feed on Maple, Horsechestnut, Elm, Poplar, Willow, Black Locust, etc...
- Currently found in New York,
- New Jersey and Massachusetts
- Eradicated in Chicago, IL



Hemlock Woolly Adelgid



LIGHT BROWN APPLE MOTH

LBAM

- Native to Australia
- First detected in California in 2007
 - Only known to occur in CA and HI
- Feed on over 1000 plants
 - Including Oak, Poplar, Willow, Pine, Persimmon, Apple and Hawthorn



Laurel Wilt: Disease Cycle & Symptoms

Dark sapwood discoloration





Gold Spotted Oak Borer



Oak Splendor Beetle



THOUSAND CANKER DISEASE OF BLACK WALNUT



How to become involved in the IISC

Visit the IISC Website where you can:

- Information about invasive species in Indiana
- Contact the Council with comments and suggestions
- Find notices of upcoming public meetings
- Become a member of an IISC Work Group

www.entm.purdue.edu/iisc/



Thank
you

